



TROUBLESHOOTING

Trouble-shooting is essentially a logical process of elimination and/or substitution. If you have friends with similar equipment by far the easiest thing to do is a direct substitution with your suspect item in their (working) system or vice versa.

Most problem solving is applied common sense in a logical, and more importantly, a systematic progression. A surgeon wouldn't start open heart surgery before he had checked for a pulse, so don't start pulling things apart until you have checked the fuse hasn't blown. (You do have a fuse, don't you?) If everything appears dead it is most likely to be a power supply problem of some sort. Note: FLYCOM batteries are supplied uncharged.

If you suspect your battery/supply cable combination and substitute it into another aircraft system, be careful that the polarity is correct (+ve is red, -ve is black). Incorrect polarity could harm some radios and some intercoms. FLYCOM intercoms will NOT be harmed by incorrect polarity, (they simply won't work until the polarity is corrected). ICOM radios WILL be harmed by incorrect polarity and over voltage. IC-A6 and IC-A24 must be used with 11v supply max.

Many checks need only a 'neck-top computer' :) Multi meter not needed.

Other checks need more than just senses/intellect, i.e. Multi meter needed.

A multi-meter is needed for checking continuity and is required for measuring:

- a) Voltage of power supplies, batteries, mike 'phantom' voltages etc.
- b) Resistance of speakers, volume controls, mikes.

A resistance measurement of zero ohms indicates electrical continuity (closed circuit)

A resistance measurement of infinite ohms indicates no continuity (open circuit)

Helping yourself

Most problems are caused by the failure of only one thing. It is extremely unlikely that two things will fail at the same time.

You can save a lot of time by checking in the right order. When you know one thing is OK you can use that thing to check other suspect things. If you ring me with a problem I will naturally ask you some (diagnostic) questions. Most of these questions are listed below. Try and answer as many of these questions for yourself as you can (and think about the answers) before ringing or e-mailing in order to save time. **Check in this order:**

KEY

Multi meter not needed

Bullets and text in blue

Multi meter needed

Bullets and text in red

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Power supply:

- Is there a voltage?
- Is the voltage the correct value? (11.5v = flat battery, 12.5v = full charge)
- Is the voltage the correct polarity? (red/brown +ve blue/black -ve) Centre of DC jack is +ve.
- Is the voltage getting to the intercom? (Battery connections, power lead, fuse, DC plug, socket)

If no multi-meter is available go straight to here. If the following checks are OK then both power supply and intercom are OK.

The intercom is polarity protected. The Mk2-3/22 model supplies power to the radio but it does not offer protection to it. If the battery polarity is wrong neither the intercom nor the radio will work and the radio will be harmed. The intercom will not be harmed.

Intercom:

Plug the power lead into the intercom on its own (removed from the radio)

- Is there a voltage at the radio power connections? (top of intercom, left of warranty label) Mk2 only. **Note: If your battery polarity is wrong the polarity at these connections will also be wrong!**
- Is there a 'click' from the relay when the PTT is operated? (ear to the intercom)
- Is side-tone audible when a helmet/headset is plugged in and turned up to maximum?
- Is there a loud click when the headset is plugged and un-plugged at max volume?
- Is a mains 'hum' audible in the headset when the tip of the 3.5mm speaker jack is touched with a damp finger? (do this indoors near mains wiring)
- Is there a slight increase in volume of side tone on the P1 socket when the PTT is operated?
- Is there total lack of side tone on the P2 socket when the PTT is operated?

When the above are OK fit the radio to the intercom and turn it ON. Leave the patch lead out and listen to the radio without the helmet/headset.

Radio:

- Is the antenna fitted securely? (use rubber duck unless the a/c antenna has been checked OK)
- Is the radio turned on?
- Is the volume turned up (approx. ½ volume)?
- Is the LCD display visible?
- Is 'hiss' audible when the squelch is turned fully C/W? (listen at the speaker in the radio)
- Is there reception from a known station? (listen at the speaker in the radio)
- Is there transmission to a known station? (use radio PTT button on side of radio and speak into the mike on the front of the radio)

If the radio checks OK by its self, plug in the patch to the radio and plug in a helmet/headset into the P1 socket on the intercom, set helmet volume to about 1/4 volume and continue:

- Is 'hiss' audible when the squelch is turned fully C/W?
- Is there reception from a known station?
- Is there voice transmission to a known station? (use the PTT on the intercom, not the radio)
- Is there 'carrier wave only' transmission to a known station? (TX with 'hiss' but no voice)

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Plug-in PTT switch:

The on-board PTT switch is wired in parallel with the plug-in PTT switch. If the on-board PTT switch works but the remote (plug-in) PTT doesn't, plug the PTT phono plug into the PTT phono socket with the phono plug cover screwed back off.

With the intercom power off:

- Is the centre pin of the phono plug making good contact in the hole of the phono socket?
- Is the outer ring of the phono plug making good contact with the outer body of the phono socket?

With the intercom power on:

- Is there a click in the relay when the plug is shorted with a screwdriver or similar conductive tool?
- Is there a click in the relay when the remote PTT switch is pressed?

With the PTT lead unplugged:

- Is there open circuit between the centre pin of the phono plug and the outer ring when the switch is NOT pressed?
- Is there closed circuit between the centre pin of the phono plug and the outer ring when the switch IS pressed?
- Is there continuity between the ends of each wire in the lead measured at the soldered joints of the plug/switch?

Helmet/headset:

- Is side-tone audible when plugged into a working intercom? (volume set to max)
- Is P1 able to hear P2?
- Is P2 able to hear P1?
- Is there any difference when the helmet/headsets are swapped into opposite sockets?

The helmet/headset jack plug has three segments: tip, ring and sleeve starting from the end.

tip = speaker. ring = mike. sleeve = common ground (earth)

- Is there a speaker resistance varying from about 5 ohms to 470 ohms when the volume control is turned from 'off' to 'maximum'? (measure sleeve to tip)
- Is there an audible click or scratch during the above test when the red probe is touched to the tip on the jack? (Wear the helmet/headset, volume to max.)
- Is there a slowly rising mike resistance of one or more k ohms? (measure sleeve to ring)
- Is there continuity between the tip of the plug and the white wire? (plug barrel unscrewed)
- Is there continuity between the ring of the plug and the red wire? (plug barrel unscrewed)
- Is there continuity between the sleeve of the plug and the ground braid? (plug barrel unscrewed)

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Antenna & coax feeder cable:

- If everything else appears OK but your radio transmissions are broken or transmitting only a very short distance:
- Is the BNC connector (to the radio) fitted properly? (push and turn C/W until it clicks)
- Is the antenna connector fitted properly to the base of the antenna?
- Is the whip fitted securely into the antenna base?
- Is there continuity between the whip and the centre pin of the BNC plug?
- Is there continuity between the outer body of the antenna plug and the outer body of the BNC plug?
- Is there open circuit between the centre pin and the BNC outer body?
- Is there continuity between the outer body of the antenna plug and all four foil ground plane strips?

If you cannot solve your FLYCOM problem yourself call +44 (0) 1905 622 343 or let me call you.

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